A Level Mathematics

Chapter 1

Algebraic Expressions

Chapter Overview

1. Basic Index Laws

2. Negative/ Fractional Indices

3. Factorise Quadratics and Cubics

4. Expanding Brackets

5. Surds



Basic Index Laws

Examples

1. Simplify $\left(a^{3}\right)^{2}×2a^{2}$

2. Simplify $\left(4x^{3}y\right)^{3}$

3. Simplify $2x^{2}\left(3+5x\right)-x\left(4-x^{2}\right)$

4. Simplify $\frac{x^{3}-2x}{3x^{2}}$ ( 2 methods)

Test Your Understanding:

1. Simplify $\left(\frac{2a^{5}}{a^{2}}\right)^{2}×3a$ 2. Simplify $\frac{2x+x^{5}}{4x^{3}}$

3.Expand and simplify $2x\left(3-x^{2}\right)-4x^{3}\left(3-x\right)$

4.Simplify $2^{x}×3^{x}$

Extension





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Negative and Fractional Indices

1. Prove that $x^{\frac{1}{2}}=\sqrt{x}$ 2. Evaluate $27^{-\frac{1}{3}}$

1. Evaluate $32^{\frac{2}{5}}$ 4. Simplify $\left(\frac{1}{9}x^{6}y\right)^{\frac{1}{2}}$

5. Evaluate $\left(\frac{27}{8}\right)^{-\frac{2}{3}}$

6. If $b=\frac{1}{9}a^{2}$, determine $3b^{-2}$ in the form $ka^{n}$ where $k,n$ are constants

Extension



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